the scalpel. It is only by the study of a type in which the cement-glands may be far removed from the mesentery and the cloaca that we can see whether the nervous ganglion would entirely break off its relations with the latter two organs and follow the cement-glands in their displacement.—*Comptes Rendus*, April 13, 1885, p. 1010.

On the Pelagic Fauna of the Baltic Sea and Gulf of Finland.

By MM. G. Pouchet and J. de Guerne.

The authors received from the Hereditary Prince of Monaco the materials obtained by him with the towing-net during a yacht voyage in the Baltic in 1884. His operations were carried on from 54° 59′ N. lat. and 17° 8′ E. long., as far as the bottom of the Gulf of Finland. They extended from the 14th August to the 15th September; the weather was fine and the sun generally shining, and the surface-temperatures of the sea when the collecting was carried on, *i. e.* from 9 A.M. to 4 P.M., were between 14° and 16° C. (57°·2–60°·8 F.).

The chief materials obtained in the Baltic consisted of Cladocerous and Copepod Crustaceans, with a great quantity of small algæ. The latter cover the whole extent of the basin included between Gothland, Prussia, and the entrance of the Gulf of Finland. They give the water of the Baltic its characteristic olive-green colour.

In the Gulf of Finland there were found freshwater Crustaceans distinctly characterized as *lacustrine pelagic* (Forel), such as *Cyclops quadricornis*, *Daphnella brachyura*, *Daphnia quadrangula*, and *Bosmina longirostris*. The last-named species forms three fourths of the mass of animals obtained in these waters. It is found associated with *Hyalodaphnia kahlbergiensis* and a *marine pelagic* form, *Evadne Nordmanni*, which becomes more and more abundant as the saltness of the water increases. Towards the south the *Evadne* is gradually substituted for the *Bosmina*, which, however, occurs beyond Danzig, and the marine *Bosmina* taken in the Sound by Müller and at Kiel by Möbius is probably only a variety of that of the Gulf of Finland.

Towards Gothland the marine Copepoda begin to be numerous, forming about one third of the animals captured. The remainder consists chiefly of the *Evadne*. Further south, in latitude 54° 59′ N., some embryonic Lamellibranchs make their appearance; but their scarcity contrasts with the abundance of such larvæ in the ocean and the Mediterranean. A single doubtful specimen of a Peridinian (*Dinophysis*) occurred. *Temora velox*, well known as an inhabitant of brackish water, occurs everywhere.

The authors sum up as follows the general results of their investigations:—"It seems to us," they say, "that the pelagic fauna of the Gulf of Finland resembles in general character that of the great

European lakes, as made known to us by Forel, Lilljeborg, P. E. Müller, Pavesi, G. O. Sars, Weissmann, &c. As in the Scandinavian lakes, certain species of *Cladocera* are represented by a considerable number of individuals. We also find them attacked by parasitic Cryptogamia. Lastly, the presence of numerous Infusoria and of Rotifera of the genus *Anurea* increases the analogy of this fauna with that of the Swiss lakes recently explored, from this point of view, by Imhof.

"These resemblances are explained by the analogy of the conditions of temperature (68° F. at the surface of the Lake of Geneva, according to Forel; 57°·2–60°·8 F. in the Gulf of Finland, according to observations made at the same time as the collections). But they are particularly explained by the slight degree of saltness of the water of the gulf (0·073 per cent. at Cronstadt, 0·262 per cent. at Leskär, and 0·751 per cent. between Gothland and the Russian coast). From the point of view of the pelagic fauna we may compare the Gulf of Finland to a lake with a wide opening to the Baltic.

"As to the central basin of that sea as far as 16° E. long. and probably still further, even to the mouth of the Oder, it presents very distinct characters of transition between the pelagic fauna of fresh waters and that of strongly saline waters. Nature seems to have completely realized the conditions which M. Plateau and M. Bert reproduced experimentally in the course of their investigations upon the vitality of *Daphniæ* in waters of different salinity.

"The presence of *Evadne* and *Podon* in the Gulf of Finland shows that the Cladocera of those genera, which are regarded as essentially marine, may adapt themselves to the conditions of existence in scarcely brackish waters. *Podon intermedius*, for example, which in the Mediterranean bears a salinity or 3·7 to 3·9 per cent., also lives in the eastern part of the Gulf of Finland, where, as has been stated, the water only presents a salinity of 0·073 per cent. We are thus led by the *Podon* and *Evadne* of a nearly fresh sea to the lacustrine forms with a marine facies (*Bythotrephes*, *Polyphemus*, &c.), which have been met with in most of the lakes of Europe" *. —*Comptes Rendus*, March 30, 1885, p. 919.

* [In their concluding remarks the authors assume that the lacustrine Cladocera derived from marine forms must have been introduced by the agency of migratory birds to their freshwater habitats, and therefore from the north to the south. But one does not see why the agency of migratory birds should be invoked at all.—W. S. D.]